

Fig. 1

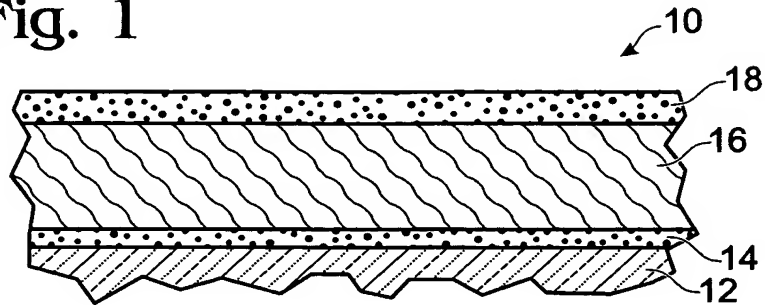


Fig. 3

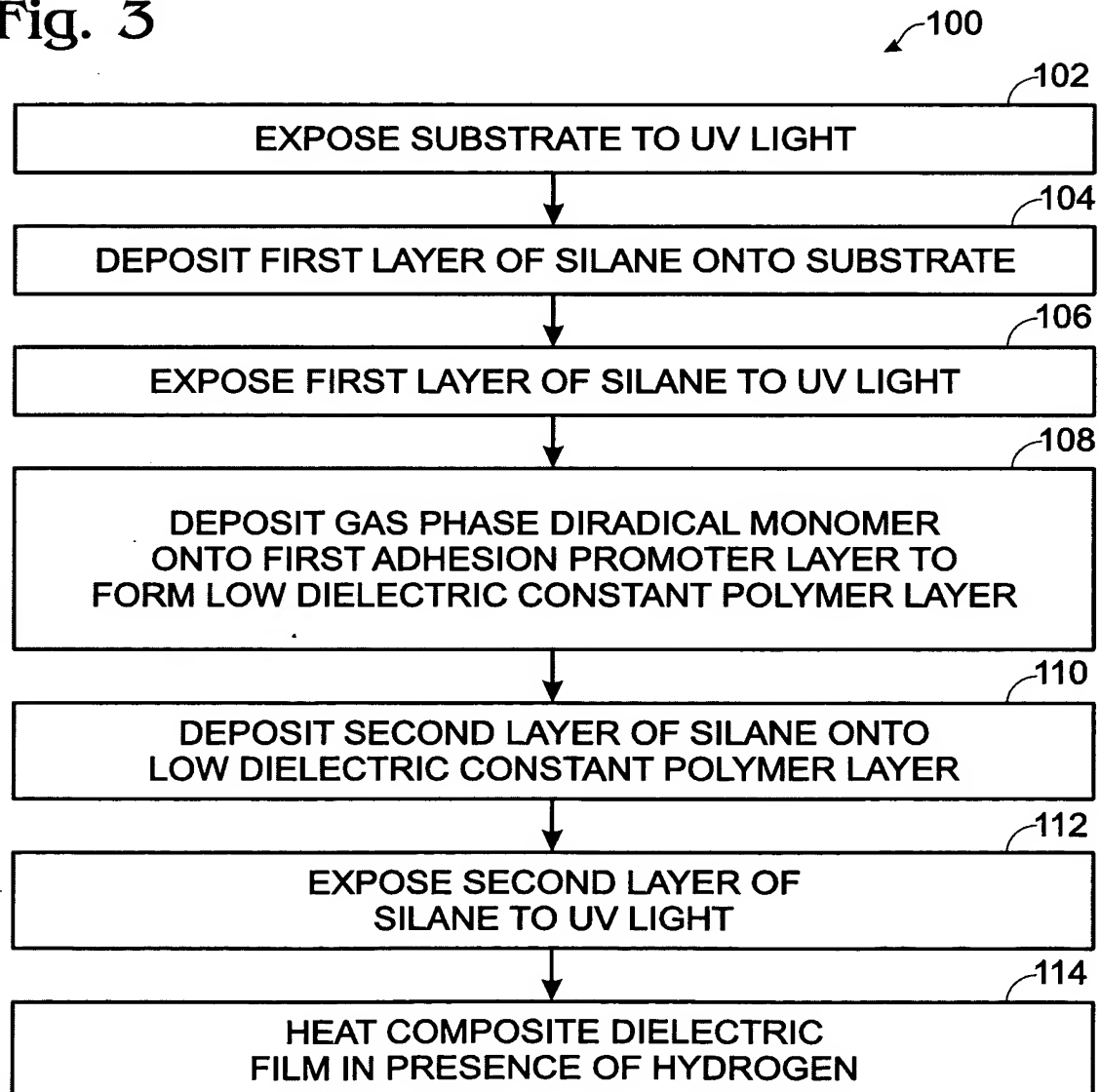


Fig. 2a

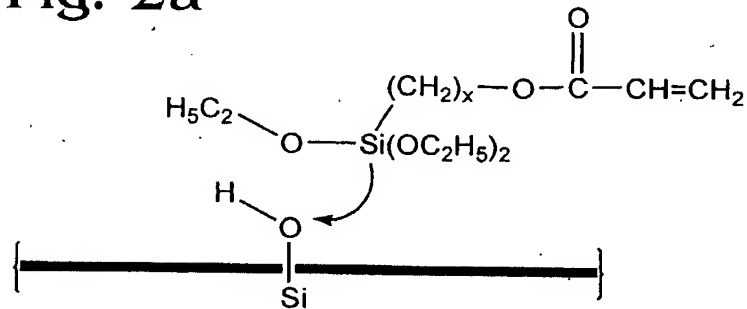


Fig. 2b

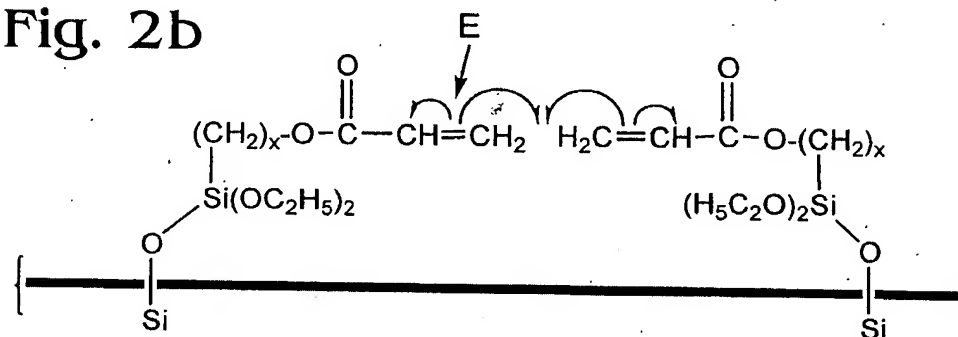


Fig. 2c

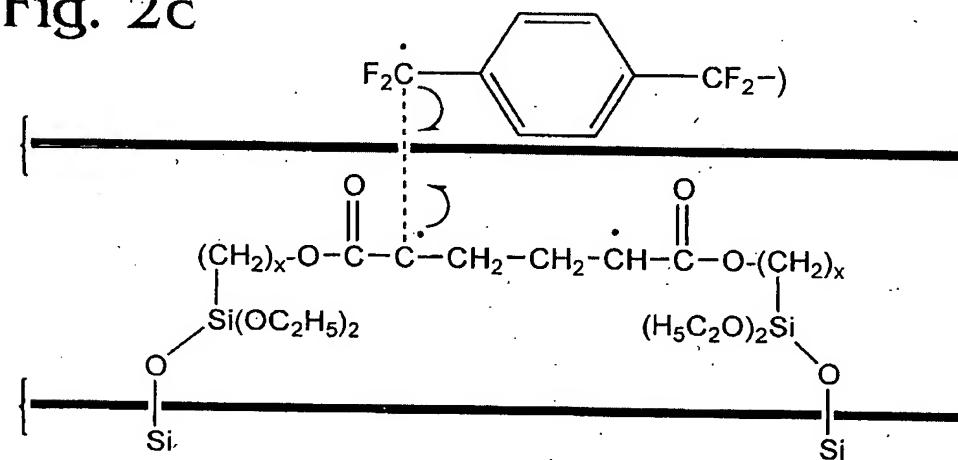


Fig. 2d

Chemical structure diagram showing a cross-linked polymer network. The structure consists of two main horizontal chains connected by cross-links. The top chain features a repeating unit with a p-fluorophenyl group (F<sub>2</sub>C-C<sub>6</sub>H<sub>4</sub>-CF<sub>2</sub>-) and a side chain:  $-(CH_2)_x-O-C(=O)-CH-CH_2-CH_2-CH-C(=O)-O-(CH_2)_x-$ . The CH groups in this side chain are connected to Si(OC<sub>2</sub>H<sub>5</sub>)<sub>2</sub> groups. The bottom chain also features a repeating unit with Si(OC<sub>2</sub>H<sub>5</sub>)<sub>2</sub> groups. The Si(OC<sub>2</sub>H<sub>5</sub>)<sub>2</sub> groups of both chains are linked by oxygen atoms, forming a cross-linked network.

**Fig. 2e**

Chemical structure diagram showing a cross-linked polymer network. The structure consists of two horizontal polymer chains, each represented by a thick black line with brackets at the ends. The top chain has a repeating unit of  $\text{F}_2\text{C}-\text{C}_6\text{H}_4-\text{CF}_2-$ . The bottom chain has a repeating unit of  $\text{Si}(\text{OC}_2\text{H}_5)_2-\text{O}-$ . A cross-linker molecule connects the two chains. It features a central  $-\text{CH}-$  group bonded to a carbonyl group ( $-\text{C}(=\text{O})-$ ). This carbonyl group is part of an ester linkage:  $-\text{O}-\text{C}(=\text{O})-\text{CH}-$ . The  $-\text{CH}-$  group is also bonded to a  $-\text{CH}_2-\text{CH}_2-\text{CH}_2-$  chain. The other end of this chain is bonded to another carbonyl group ( $-\text{C}(=\text{O})-$ ), which is part of another ester linkage:  $-\text{C}(=\text{O})-\text{O}-$ . The  $-\text{O}-$  groups of these two ester linkages are connected to the top and bottom polymer chains, respectively. The top chain's oxygen is connected to a  $-\text{Si}(\text{OC}_2\text{H}_5)_2-$  group, and the bottom chain's oxygen is connected to a  $-\text{Si}(\text{OC}_2\text{H}_5)_2-$  group. Various thermal treatment steps are indicated by curved arrows:  $300^\circ\text{C}$  for the top chain,  $250^\circ\text{C}$  for the side chains,  $300^\circ\text{C}$  for the central cross-linker, and  $350^\circ\text{C}$  for the bottom chain.

[illegible]

Fig. 4

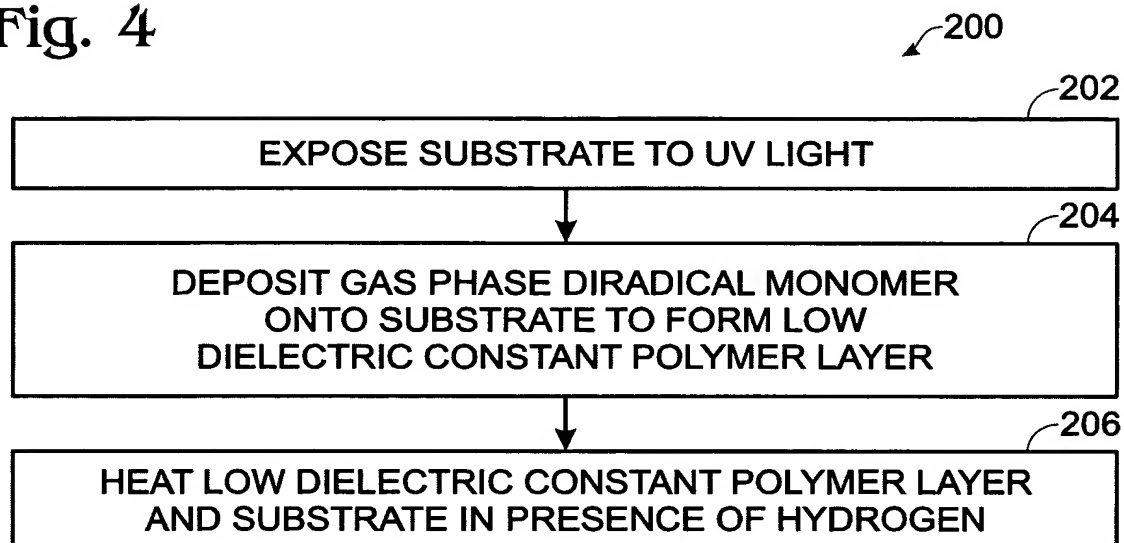


Fig. 5

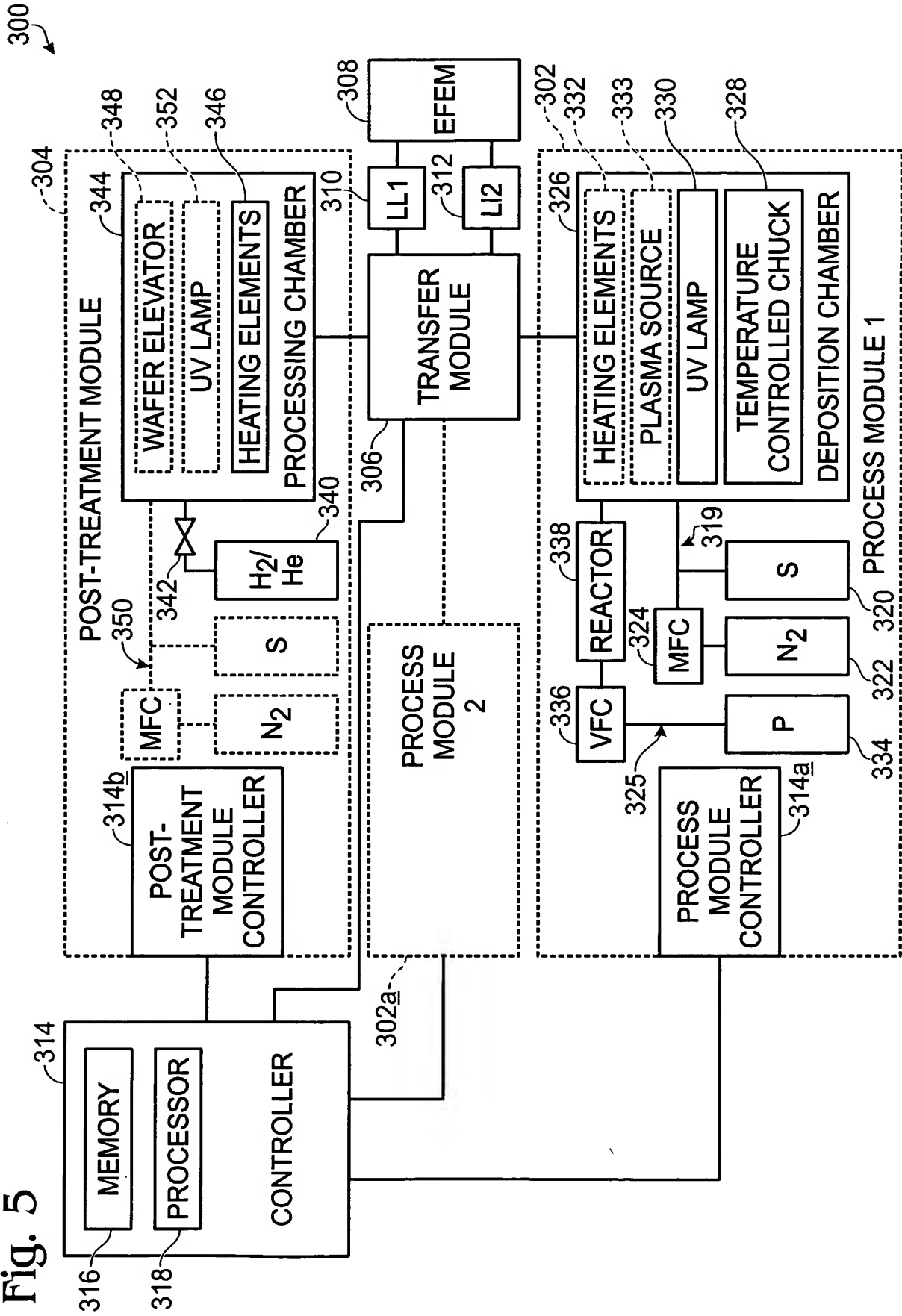


Fig. 6

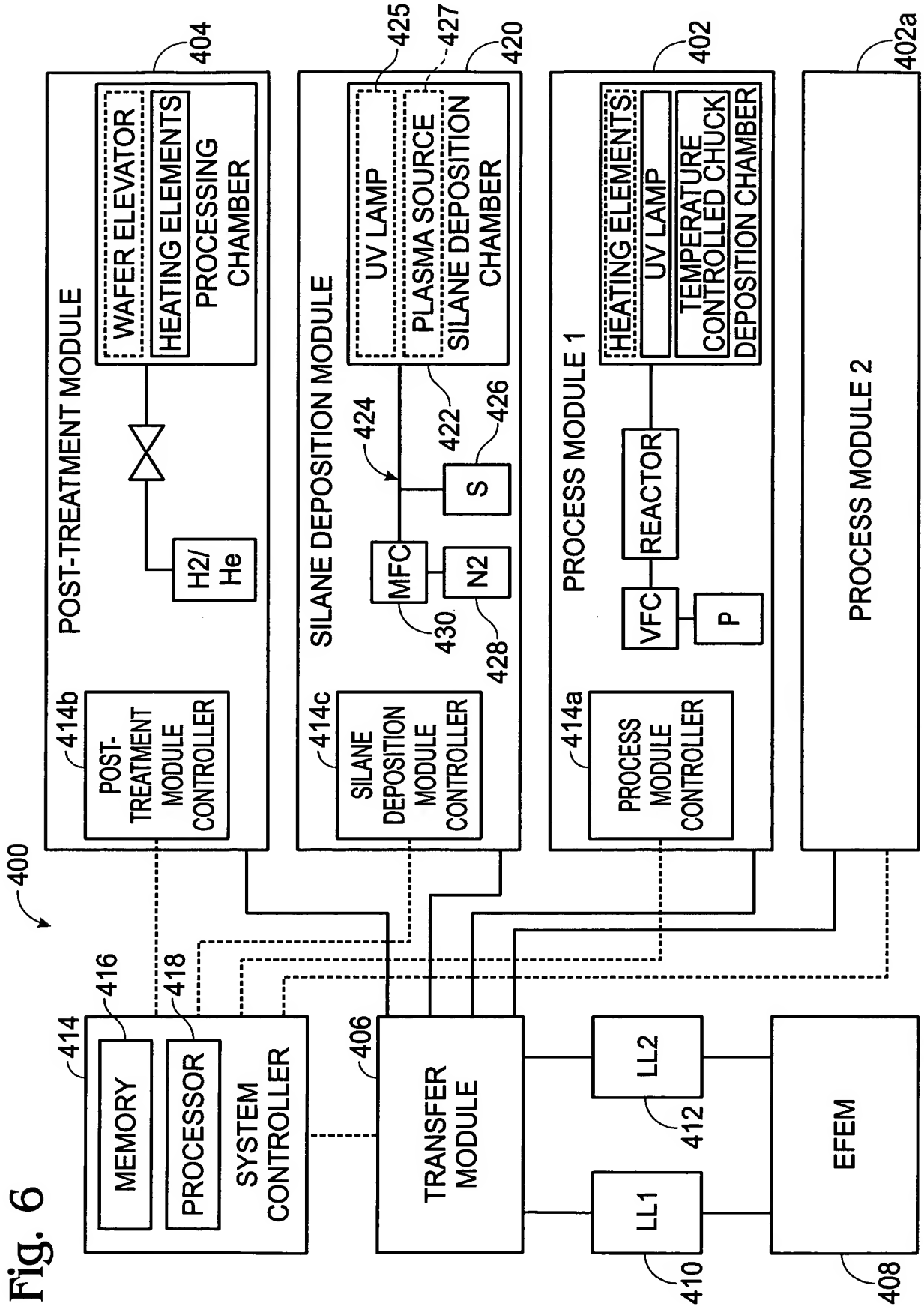
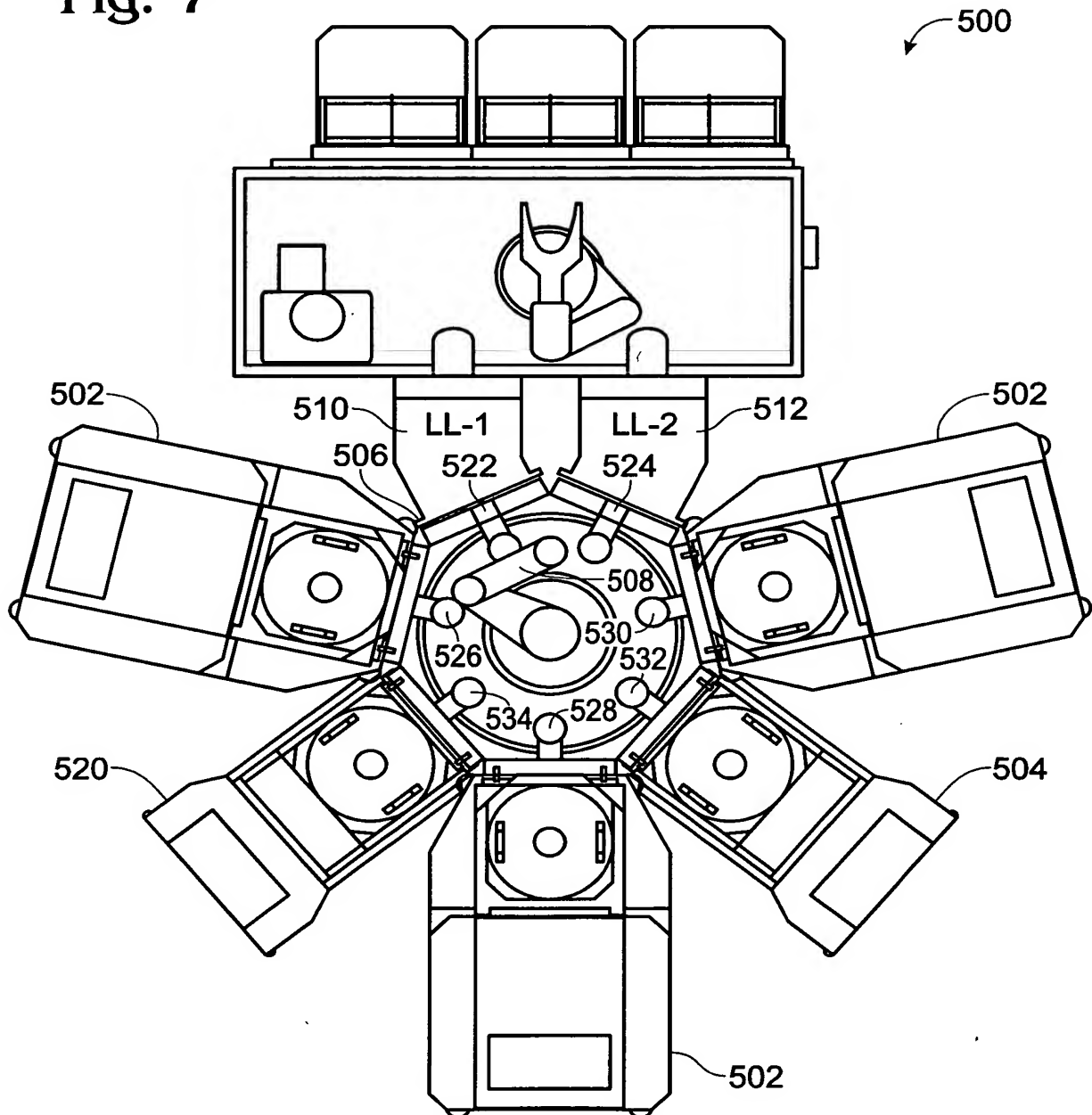


Fig. 7



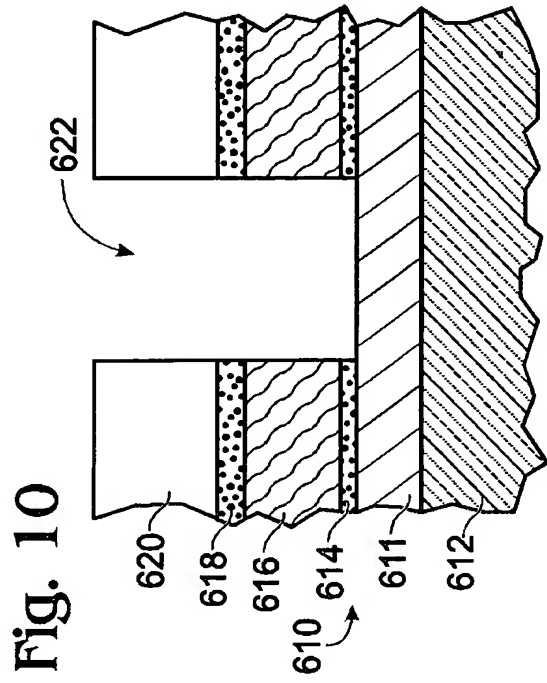
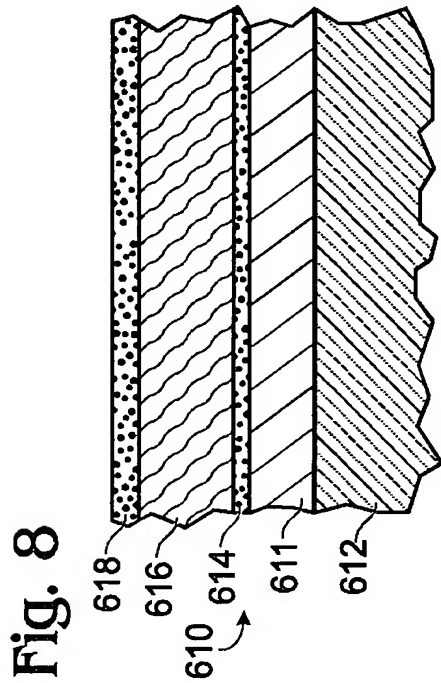
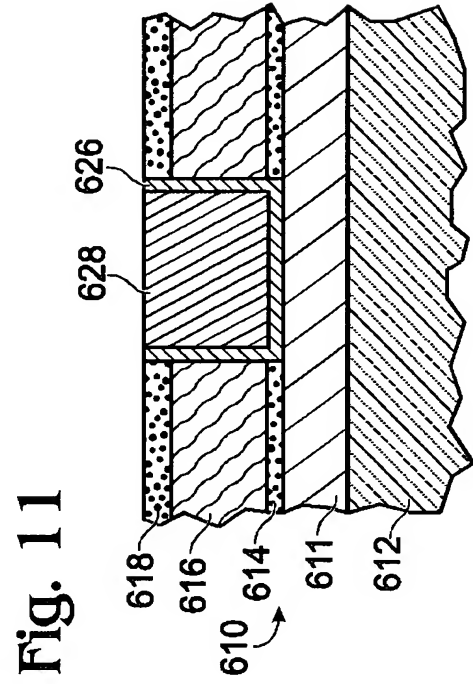
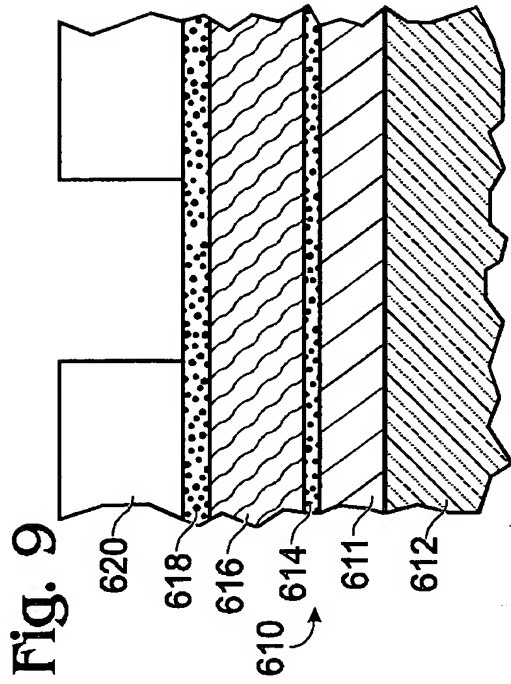




Fig. 12

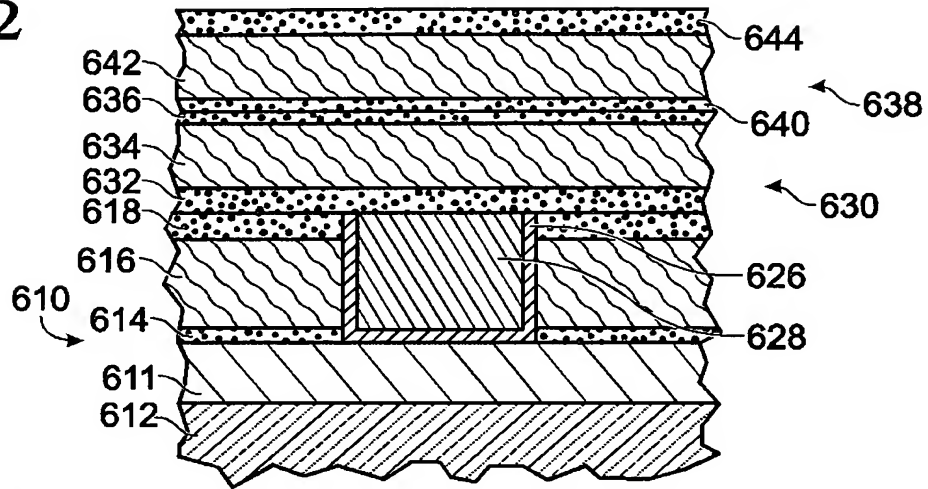


Fig. 13

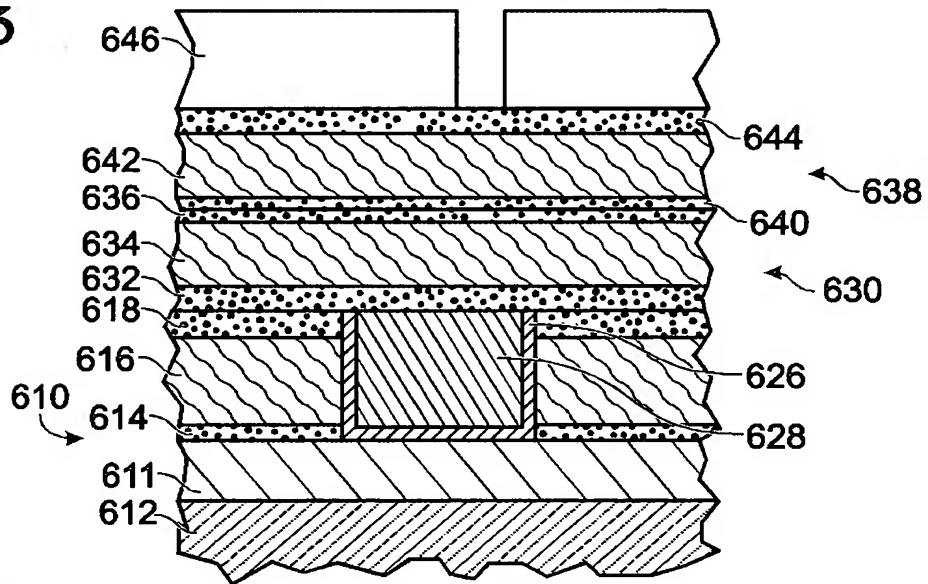


Fig. 14

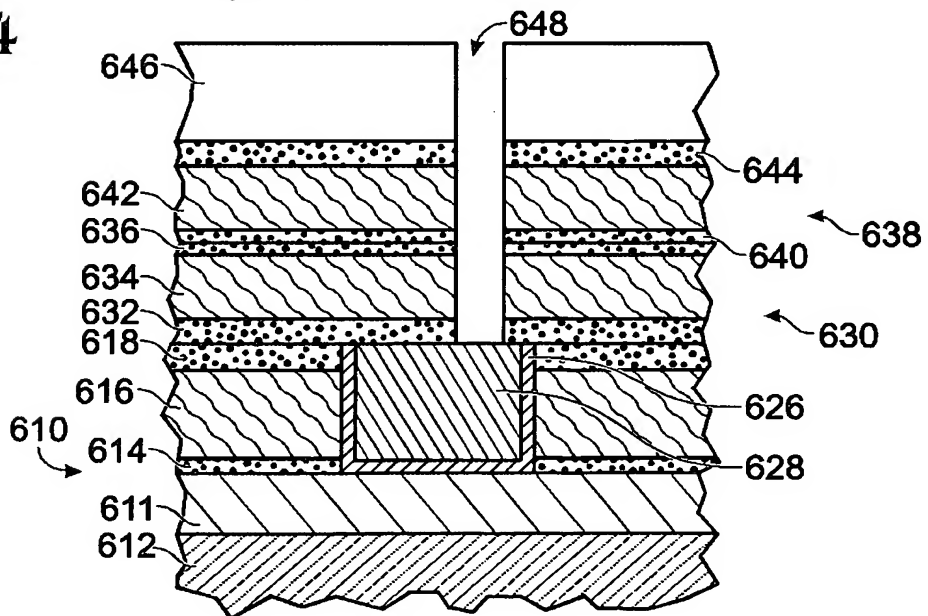


Fig. 15

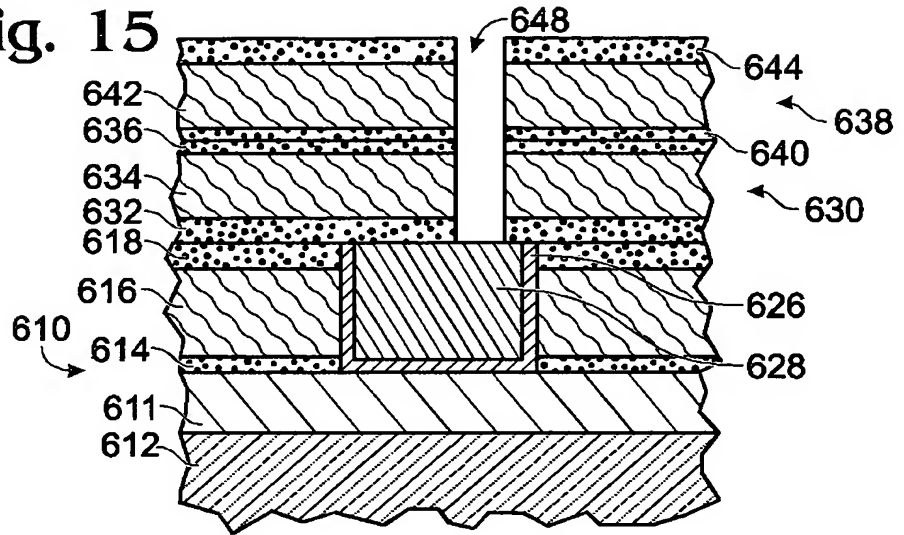


Fig. 16

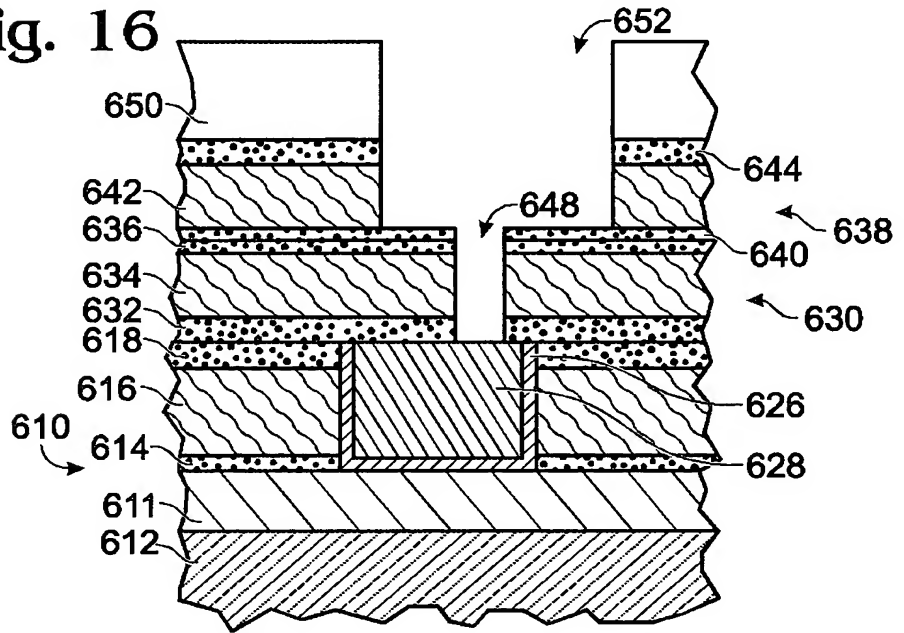


Fig. 17

